RGB LED Spectrum Bluetooth Audio Speaker DIY Kit

1.Introduction:

It is a RGB LED Spectrum Bluetooth Audio Speaker DIY Kit with remote control. It has 10pcs RGB LED music spectrum display. It can play music form Bluetooth, TF Card, U-disk with 4ohm 2in speakers. The voice is clear and loud.

2.Feature:

1>.Music spectrum display
2>.BLE5.0 Bluetooth audio play
3>.Support TF Card and U-disk music
4>.Remote controller
5>.Adjustable Next/Prev/VOL+/VOL-/Play/Pause
6>.Support power OFF memory function
7>.DIY manual soldering
8>.Simple and easy to operate

3.Parameter:

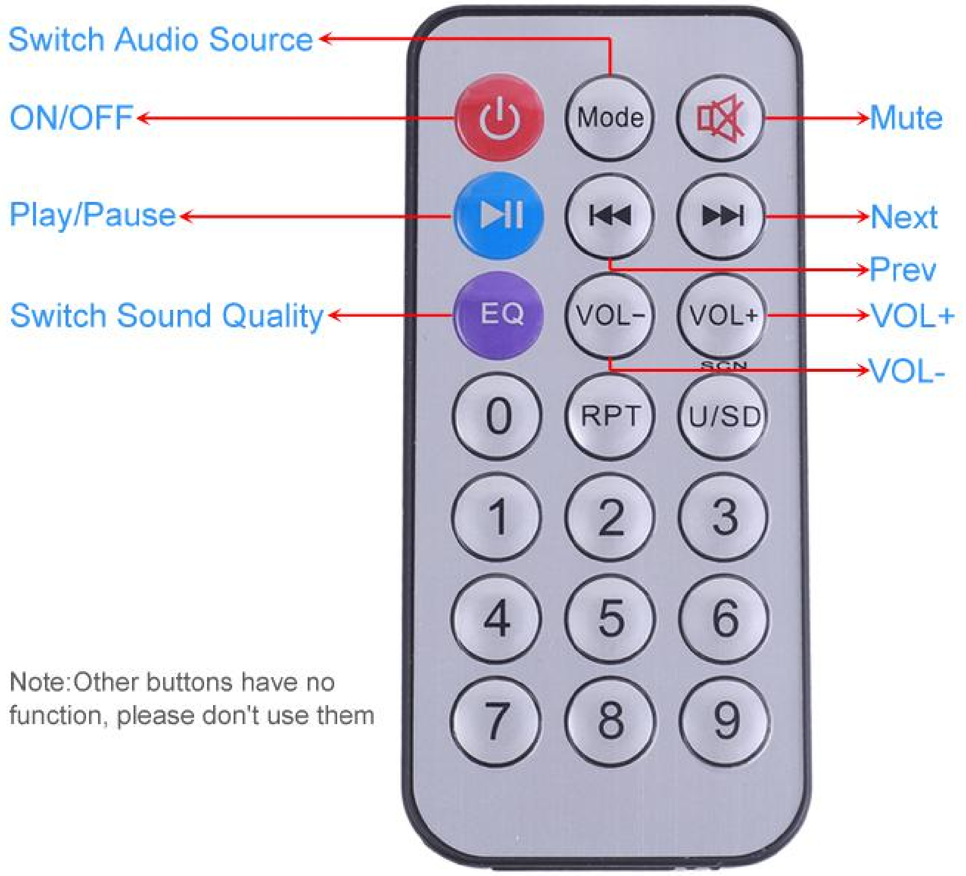
1>.Item name: RGB LED Spectrum Bluetooth Audio Speaker DIY Kit
2>.Work Voltage:DC 3.7V-5V
3>.Bluetooth Version:5.0
4>.Bluetooth Distance:15meter(Max)
5>.Amplifier Power:3W*2
6>.Music Source:Bluetooth/U-disk/TF Card
7>.Control Type:Bluetooth/Remote Controller/On Board Button
8>.LED Color:Yellow/Green/Red/Blue
9>.Work Temperature:-40℃~85℃
10>.Work Humidity:0%~95%RH
11>.Size(Installed):135*74*64mm

4.Component listing:

NO.	Component Name	PCB Marker	Parameter	QTY
1	Metal Film Resistor	R1,R3	20Kohm	2
2	Metal Film Resistor	R4,R5	470ohm	2
3	Metal Film Resistor	R2	2Mohm	1
4	CD4017	U1	DIP-16	1
5	RGB LED	D1-D11	5mm	11
6	Transistor S9014	Q1	TO-92	1
7	MIC Microphone	MK1	9*7mm	1
8	Electrolytic Capacitor	C3	1uF	1
9	Electrolytic Capacitor	C2	100uF	1
10	Bluetooth Audio Controller			1
11	4ohm 3W Speaker		2in 52*52*24mm	2
12	2Pin PH2.0 Wire		15cm	4
13	DC-022 Power Socket			1
14	Power Socket Nut			1
15	Black Switch			1
16	Transparent Acrylic Shell			6

17	M3 Screw		M3*10mm	12
18	M3 Nut		M3	12
19	M2 Screw		M2*10mm	12
20	M2 Nut		M2	12
21	M3 Copper Pillar		M3*8mm	2
22	M3 Screw		M3*6mm	4
23	USB Power Cable		100cm	1
24	Remote Controller			1
25	PCB		62*27*1.6mm	1
Note:Users can complete the installation according to the PCB silk screen and component list.				

5.Remote Controller:



6.Note:

1>.It is a DIY kit so that need finish install by user.

2>.Bluetooth module in the kit has 2 versions which are DIP Socket Version and SMD Socket Version. They will be shipped randomly, so pay attention to the 3 installation methods we provide. So we provide 3 methods to connect Bluetooth module to LED light board. The third method is suitable for all versions.

3>.It is work voltage is 3.7V-5V so please make sure the input voltage can not more than 5V.Otherwise, it will be damaged.

7.Application:

1>.Training welding skills

2>.Student school

3>.DIY production

4>.Project Design
5>.Electronic competition
6>.Gift giving
7>.Crafts collection
8>.Home decoration
9>.Souvenir collection
10>.Graduation design
11>.Holiday gifts

8.Installation Tips:

1>.User needs to prepare the soldering tool at first.
- 1.1>.Soldering iron (<50 Watt)
- 1.2>.Rosin core ("radio") solder
- 1.3>.Wire cutters
- 1.4>.Wire strippers
- 1.5>.Philips screwdriver

2>.Please be patient until the installation is complete.
3>.The package is DIY kit.It need finish install by user.
4>.The soldering iron can't touch the components for a long time(1.0 second), otherwise it will damage the components.
5>.Pay attention to the positive and negative of the components.
6>.Strictly prohibit short circuit.
7>.Install complex components preferentially.
8>.Make sure all components are in right direction and right place.
9>.Please wear anti-static gloves or anti-static wristbands when installing electronic components.
10>.User must install the LED according to the specified rules.Otherwise some LED will not light.
11>.It is strongly recommended to read the installation manual before starting installation!!!

9.Installation Steps(Please be patient install!!!):

1>.Step 1: Install 2pcs 20Kohm Metal Film Resistor at R1,R3. Identify the resistor value as shown in color.

2>.Step 2: Install 2pcs 470ohm Metal Film Resistor at R4,R5. Identify the resistor value as shown in color.

3>.Step 3: Install 1pcs 2Mohm Metal Film Resistor at R2. Identify the resistor value as shown in color.

4>.Step 4: Install 1pcs DIP-6 IC CD4017 at U1.There is a mark(notch) on one end of the IC and there is a mark(curved silk screen printing) on PCB where the IC can place on.These two marks are corresponding to each other and are used to specify the installation direction of the IC.

5>.Step 5: Identify the positive(anode) and negative(cathode) lead of LED.The leads of the LED must be installed correctly, otherwise the LED cannot be turned on.Here are four methods as following:

5.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

5.2>.Identify the negative(cathode) of the LED is to look into the plastic case where one can see that the negative(cathode) is much thicker/bigger inside the plastic case than the anode lead.

5.3>.Identify by edge of plastic case.The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

5.4>.Test by 3V battery or multimeter.The pin is positive(anode) lead which has connect to the positive of 3V if LED can light up after connect 3V power supply.(LED should not be powered directly from the 3V for a short time:less then

0.5second)

5.5>.It is positive(anode) where the white mark “+” pointing to on PCB.

6>.Step 6: Install 10pcs 5mm RGB LED at D1-D10. Pay attention to distinguish between positive and negative at Step5 and Bend the LED pins.

7>.Step 7: Install 1pcs TO-92 S9014 Transistor at Q1. Pay attention to the installation direction.Arc screen printing corresponds to arc case.

8>.Step 8: Install 1pcs 9*7mm MIC Microphone at MK1.Please distinguish between positive and negative. Note:The marked pin is negative pole.

9>.Step 9: Install 1pcs 1uF Electrolytic Capacitor at C3. There is a white ‘ + ’ on PCB silk screen printing where the positive(anode) can insert into.The longer lead is positive(anode).

10>.Step 10: Install 1pcs 5mm RGB LED at D11. Pay attention to distinguish between positive and negative at Step5.

11>.Step 11: Install 1pcs 100uF Electrolytic Capacitor at C2. There is a white ‘ + ’ on PCB silk screen printing where the positive(anode) can insert into.The longer lead is positive(anode)

12>.Step 12: Install the extra pins from LED at J1-J3.

13>.Step 13: Install 1pcs 15cm 2Pin PH2.0 Wire on ‘+’ and ‘ - ’. Red wire connect to ’+’ and black wire connect to ‘ - ’. Then cut white socket.These two wires are used to connect power.Refer to the wiring location and note the PCB mark shown if the wire is in another color!

14>.Step 14: Tear off the protective film on acrylic surface.

15>.Step 15: Fix 2pcs M3*8 Copper Pillar and 2pcs M3*6mm Screw on acrylic panel that is the base for LED Board.

16>.Step 16: Fix RGB LED Board on Copper Pillar by 2pcs M3*6mm Screw.

17>.Step 17: Know Bluetooth audio controller: Interface function introduction. Note: Bluetooth module in the kit has 2 versions which are DIP Socket Version and SMD Socket Version. They will be shipped randomly, so pay attention to the 3 installation methods we provide. So we provide 3 methods to connect Bluetooth module to LED light board. The third method is suitable for all versions.

18>.Step 18: Know Bluetooth audio controller: Wiring diagram.

19>.Step 19: Fix Bluetooth audio controller on acrylic panel by 2pcs M3*10mm Screw and 2pcs M3 Nut.

20>.Step 20: Connect from LED board to Bluetooth audio controller by 3 methods.

20.1>.Method-1 for DIP Socket Version Bluetooth Module: ‘ 5V ’ form Bluetooth module connect to ‘ + ’ on LED board; ‘ GND ’ form Bluetooth module connect to ‘ - ’ on LED board.

20.2>.Method-2 for SMD Socket Version Bluetooth Module: ‘ GND ’ form Bluetooth module connect to ‘ - ’ on LED board. There is a pad on right which has marked on picture is 5V and connect this pad to 5V on LED board.

20.3>.Method-3 for DIP and SMD Socket Version Bluetooth Module. This method changes power supply connection point of LED light board. User can refer to Step-26A which shown how to connect LED board if no find 5V/GND.

21>.Step 21: Install 2pcs 15cm 2Pin PH2.0 Wire on 2pcs 4ohm 3W Speaker.The speakers does not need to distinguish between positive and negative poles.

22>.Step 22: Fix speaker on the other two are smaller acrylic panel by 8pcs M3*10mm Screw and 8pcs M3 Nut.

23>.Step 23: Fix 1pcs DC-022 Power Socket by the biggest nut on acrylic panel.

24>.Step 24: Fix 1pcs Black Switch on acrylic panel. Pay attention to the buckle on the switch, which can be fixed by itself.Pay attention to the installation direction.

25>.Step 25: Cut about 3cm red wire to connect DC-022 Power Socket and Black Switch.Pay attention to their pin selection and can not choose to connect other pins.

26>.Step 26: Connect 1pcs 15cm 2Pin PH2.0 Wire to DC-022 and Switch. The red wire connect to Black Switch and the black wire connect to DC-022 Power Socket.

Refer to the wiring location shown if the wire is in another color.

26A>.Step 26A: Connect LED spectrum board to Bluetooth audio controller if the LED board get voltage form power socket and switch but not form Bluetooth module. Otherwise user can ignore this step if use Method-1 or Method-2 at Step 20.

26A.1>. 5V on LED board connects to the middle pin on switch which has connected a red wire.

26A.2>. GND on LED board connects to the top pin on DC-022 Power Socket which has connected a black wire.

Note:User can refer to this connection method for both DIP and SMD Socket Version of Bluetooth modules.

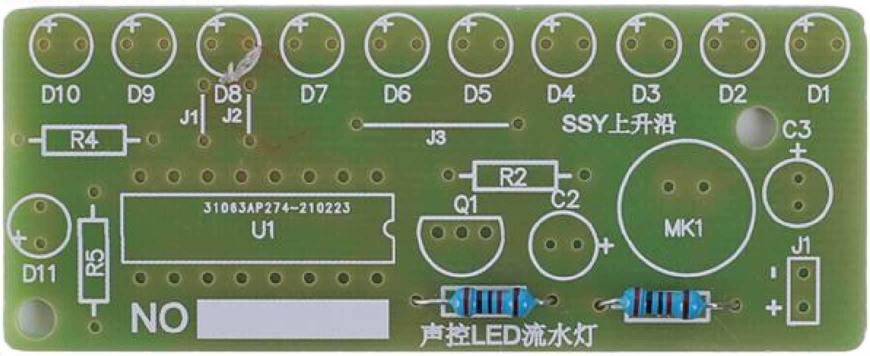
27>.Step 27: Connect 1pcs power wire to red socket and 2pcs speaker wires to white sockets.

28>.Step 28: Assemble 6pcs acrylic panels by 12pcs M2*10mm Screw and 12pcs M2 Nut.Please be patient when installing the screws.

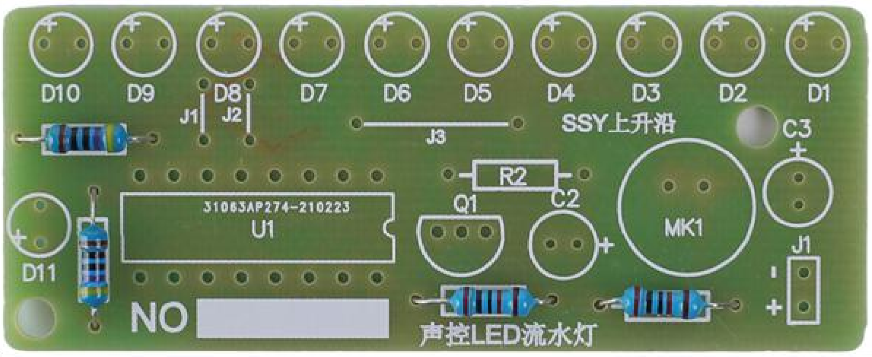
29>.Step 29: Connect to power supply and enjoy the effect.Note Please provide sufficient working current.It is recommended to use a 5V 2A power supply.User should exercise care and provide additional support to the acrylic with one hand while pressing the switch into place with the other hand when the power is plugged in.

10.Install shown steps:

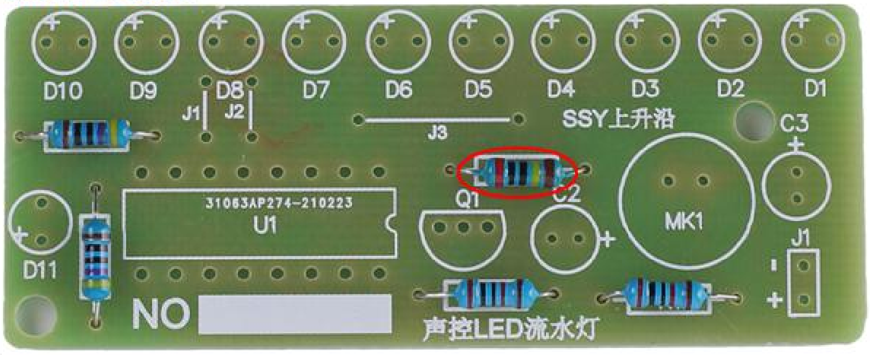
Step 1: Install 2pcs 20Kohm Metal Film Resistor at R1,R3. Identify the resistor value as shown in color.



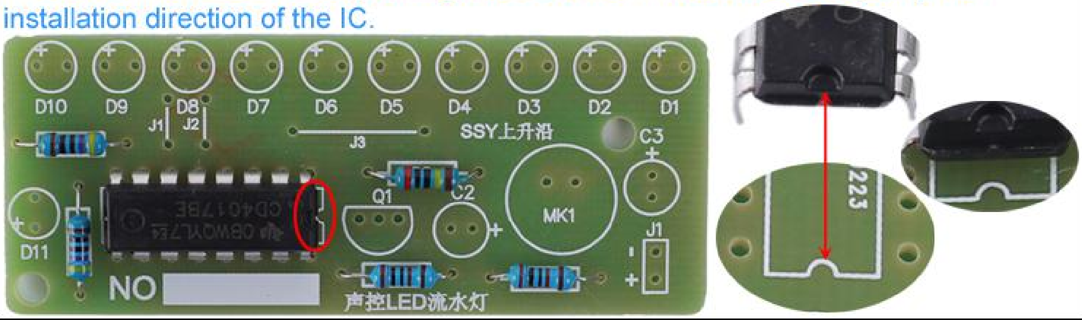
Step 2: Install 2pcs 470ohm Metal Film Resistor at R4,R5. Identify the resistor value as shown in color.



Step 3: Install 1pcs 2Mohm Metal Film Resistor at R2. Identify the resistor value as shown in color.



Step 4: Install 1pcs DIP-6 IC CD4017 at U1.There is a mark(notch) on one end of the IC and there is a mark(curved silk screen printing) on PCB where the IC can place on. These two marks are corresponding to each other and are used to specify the installation direction of the IC.



Step 5: Identify the positive(anode) and negative(cathode) lead of LED.The leads of the LED must be installed correctly, otherwise the LED cannot be turned on.Here are four methods as following:

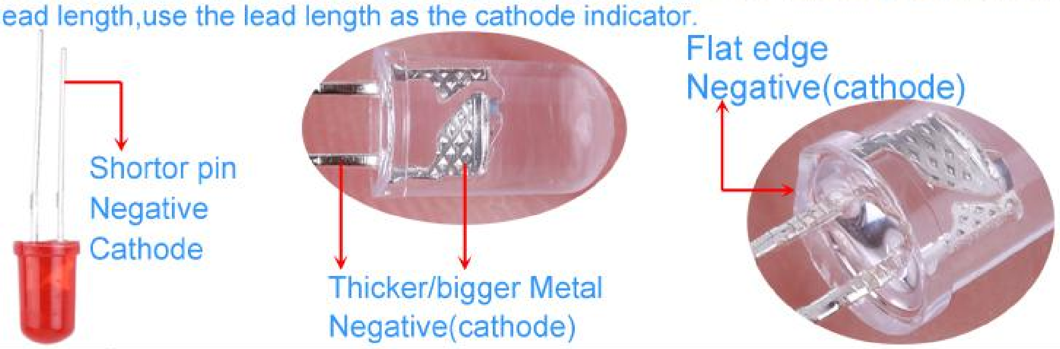
5.1>.According to the length of the LED lead to distinguish. The longer pin is positive(anode) lead. The shorter pin is negative(cathode) lead.

5.2>.Identify the negative(cathode) of the LED is to look into the plastic case where one can see that the negative(cathode) is much thicker/bigger inside the plastic case than the anode lead.

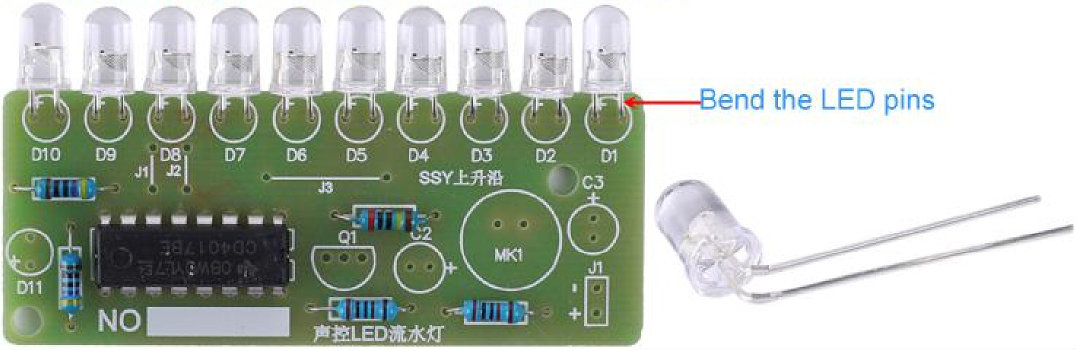
5.3>.Identify by edge of plastic case.The negative(cathode) lead of the LED should be the pin nearest the flat on the plastic case.

5.4>.Test by 3V battery or multimeter.The pin is positive(anode) lead which has connect to positive of 3V if LED can light up after connect 3V power supply.
(LED can not be powered directly from 3V for a short time:less then 0.5second)

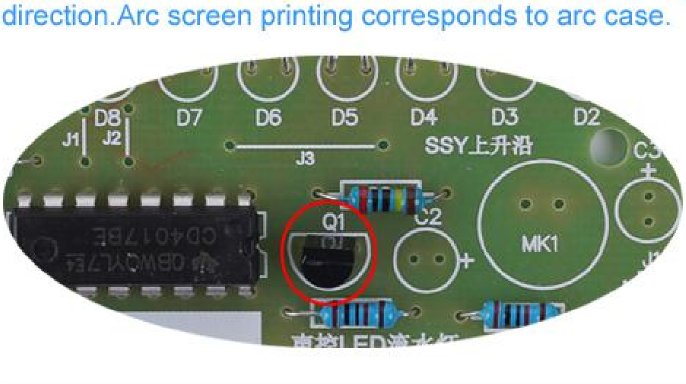
5.5>.Note:If the flat on the package disagrees with other indicators(short lead,large cathode lead end), then other indicators take priority. I.e. if the flat disagrees with the lead length,use the lead length as the cathode indicator.



Step 6: Install 10pcs 5mm RGB LED at D1-D10. Pay attention to distinguish between positive and negative at Step5 and bend the LED pins.

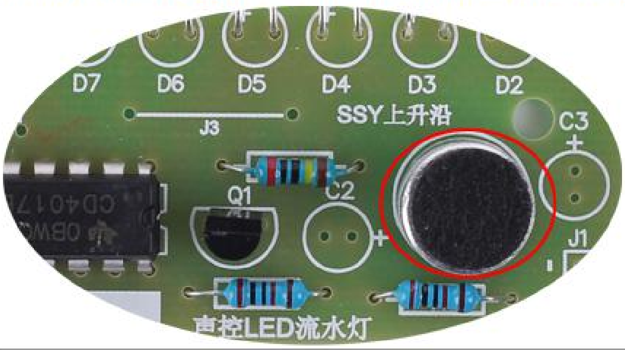


Step 7: Install 1pcs TO-92 S9014 Transistor at Q1. Pay attention to the installation direction.Arc screen printing corresponds to arc case.





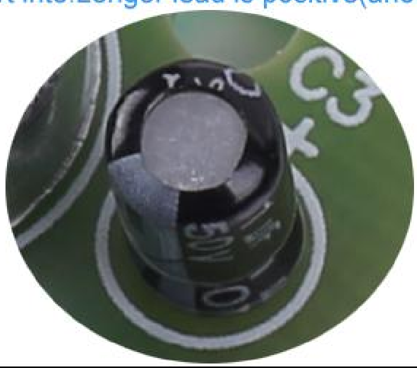
Step 8: Install 1pcs 9*7mm MIC Microphone at MK1.Please distinguish between positive and negative. Note:The marked pin is negative pole.



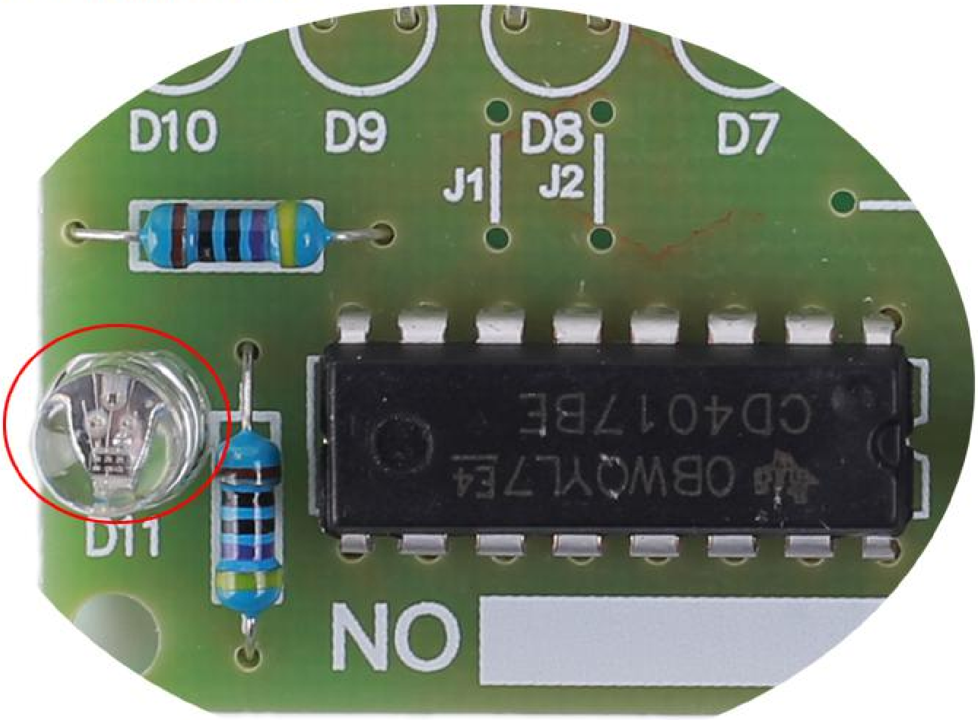


Step 9: Install 1pcs 1uF Electrolytic Capacitor at C3. There is a white ‘ + ’ on PCB silk screen printing where positive(anode) can insert into.Longer lead is positive(anode)





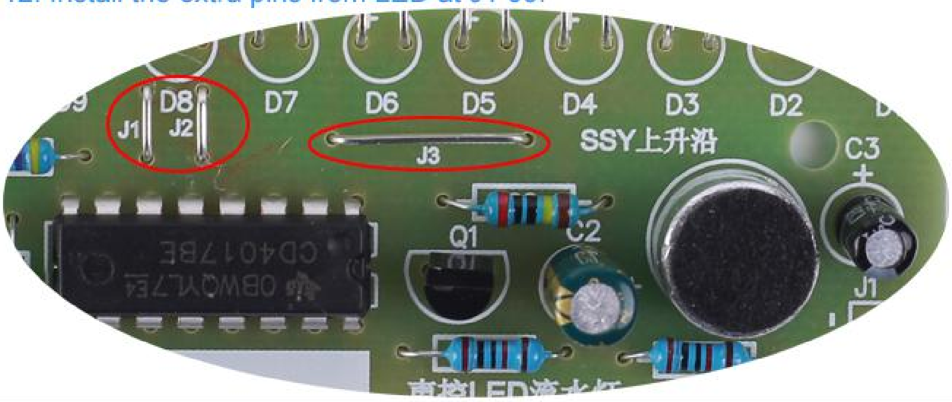
Step 10: Install 1pcs 5mm RGB LED at D11. Pay attention to distinguish between positive and negative at Step5.



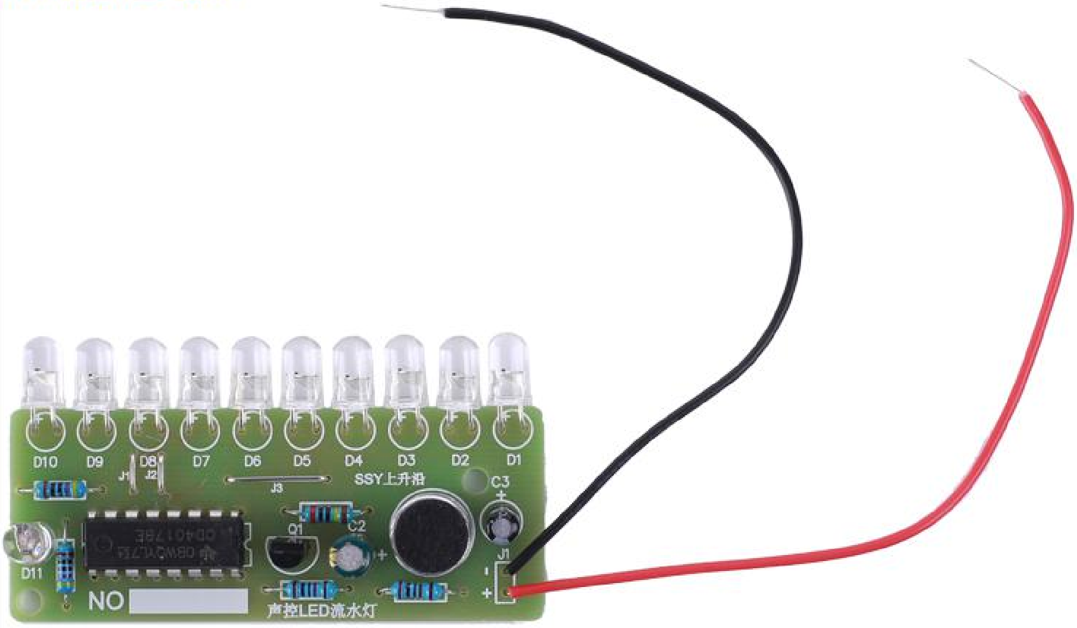
Step 11: Install 1pcs 100uF Electrolytic Capacitor at C2. There is a white ‘ + ’ on PCB silk screen printing where positive(anode) can insert into.Longer pin is positive(anode)



Step 12: Install the extra pins from LED at J1-J3.



Step 13: Install 1pcs 15cm 2Pin PH2.0 Wire on '+' and ' - '. Red wire connect to '+' and black wire connect to ' - '. Then cut white socket.These two wires are used to connect power.Refer to the wiring location and note the PCB mark shown if the wire is in another color!

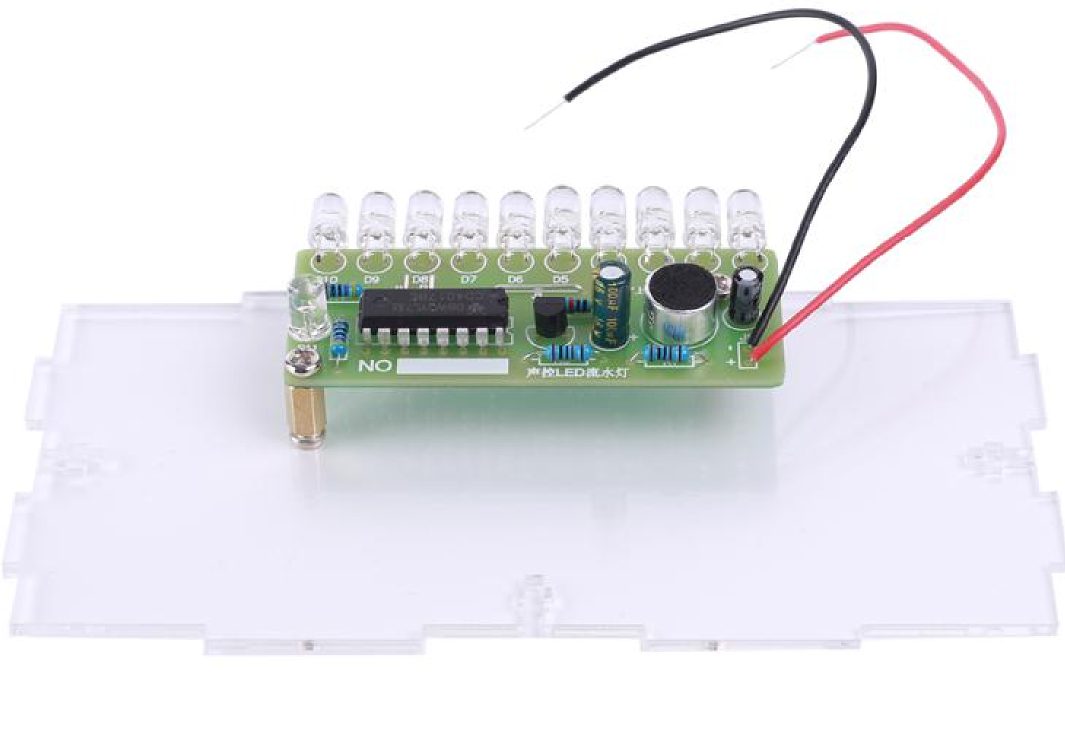


Step 14: Tear off the protective film on acrylic surface.

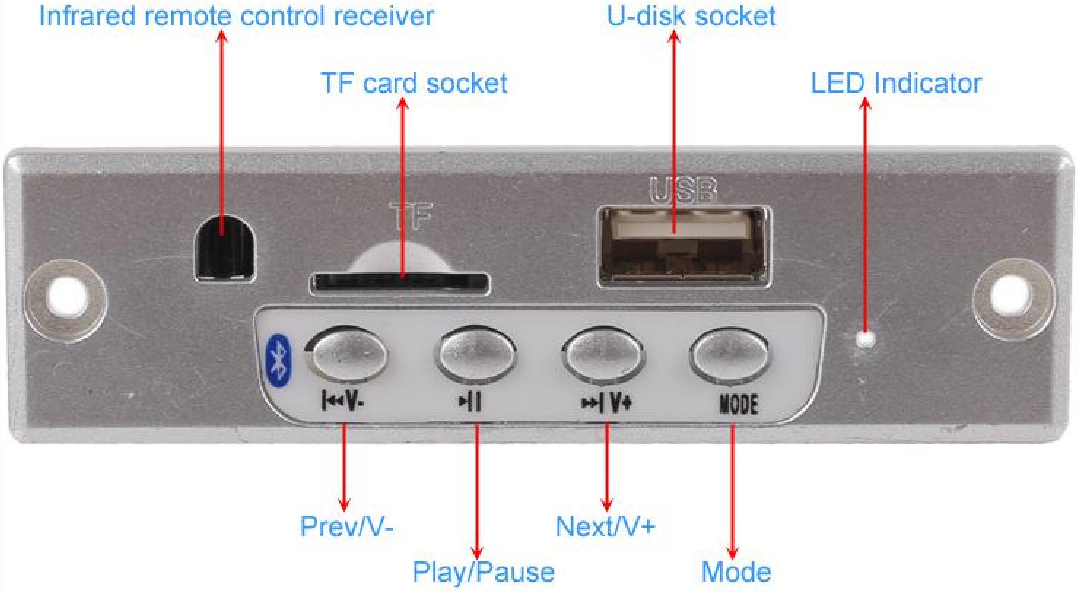
Step 15: Fix 2pcs M3*8 Copper Pillar and 2pcs M3*6mm Screw on acrylic panel that is the base for LED Board.



Step 16: Fix RGB LED Board on Copper Pillar by 2pcs M3*6mm Screw.



Step 17: Know Bluetooth audio controller: Interface function introduction.

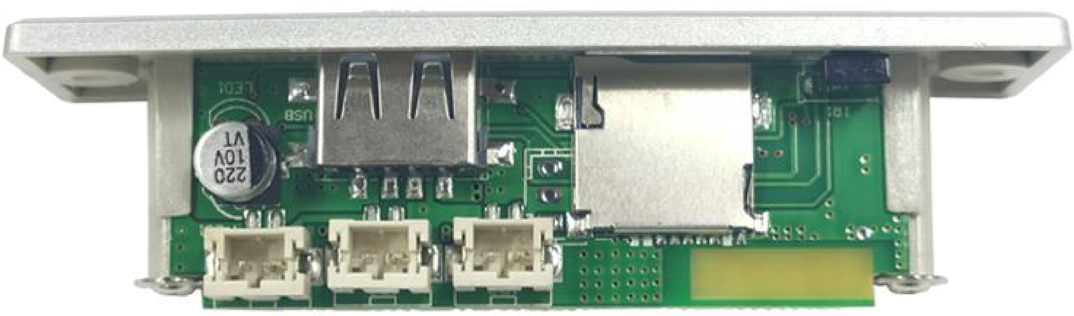


Prev/V- : Short press to select previous music; Keep press to decrease volume.
Play/Pause: It is used to play or pause music.
Next/V+: Short press to select next music; Keep press to increase volume.
Mode: It is used to switch music source: Bluetooth/U-disk/TF card.

Note: Bluetooth module in the kit has 2 versions which are DIP Socket Version and SMD Socket Version. They will be shipped randomly, so pay attention to the 3 installation methods we provide. So we provide 3 methods to connect Bluetooth module to LED light board. The third method is suitable for all versions

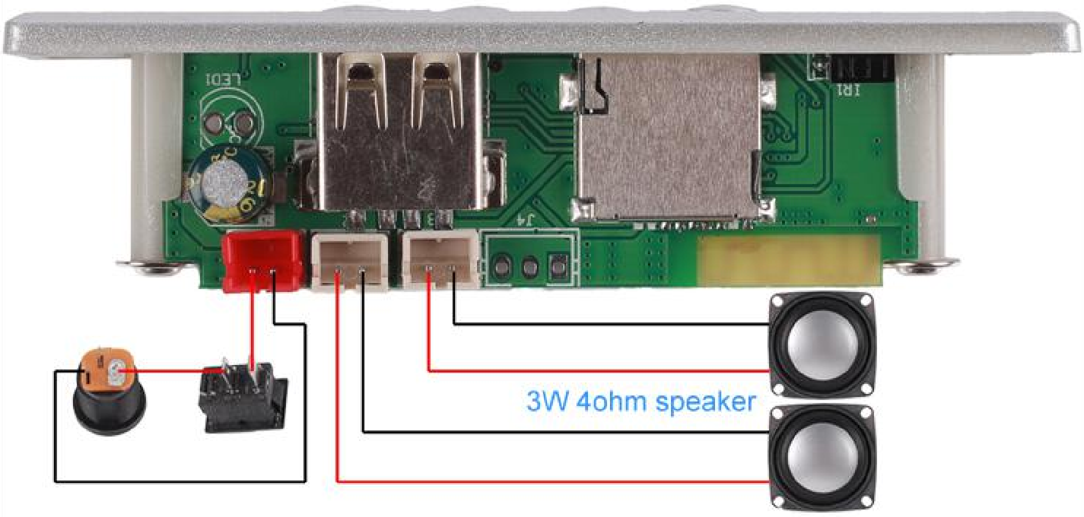


DIP Socket Version

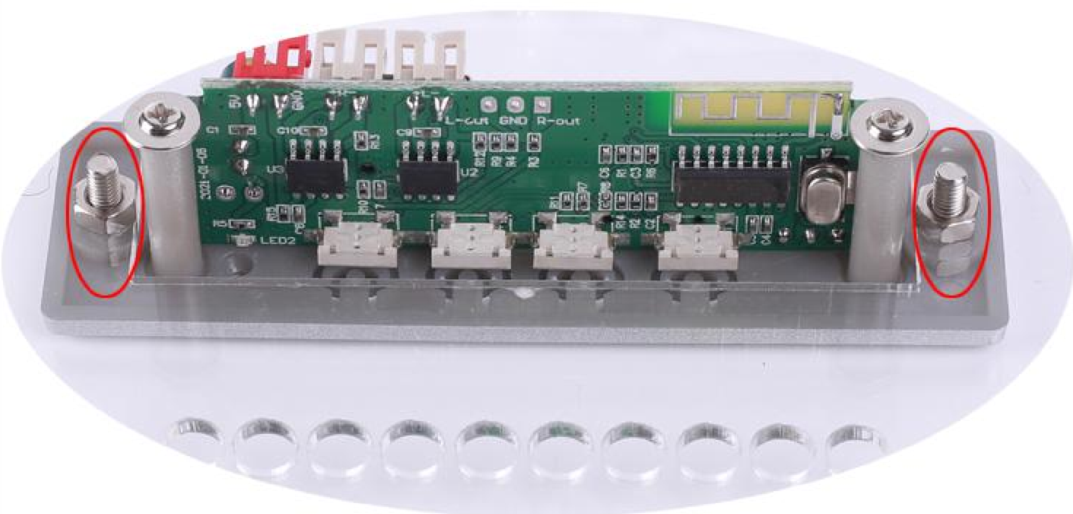


SMD Socket Version

Step 18: Know Bluetooth audio controller: Wiring diagram.

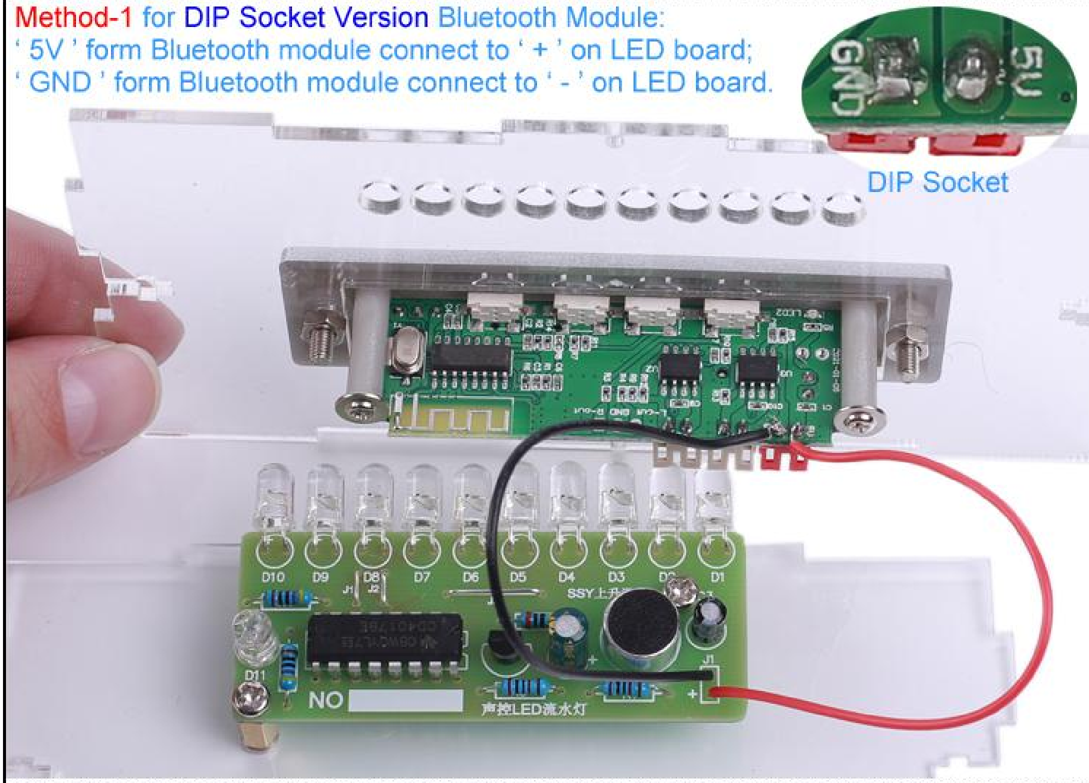


Step 19: Fix Bluetooth audio controller on acrylic panel by 2pcs M3*10mm Screw and 2pcs M3 Nut.

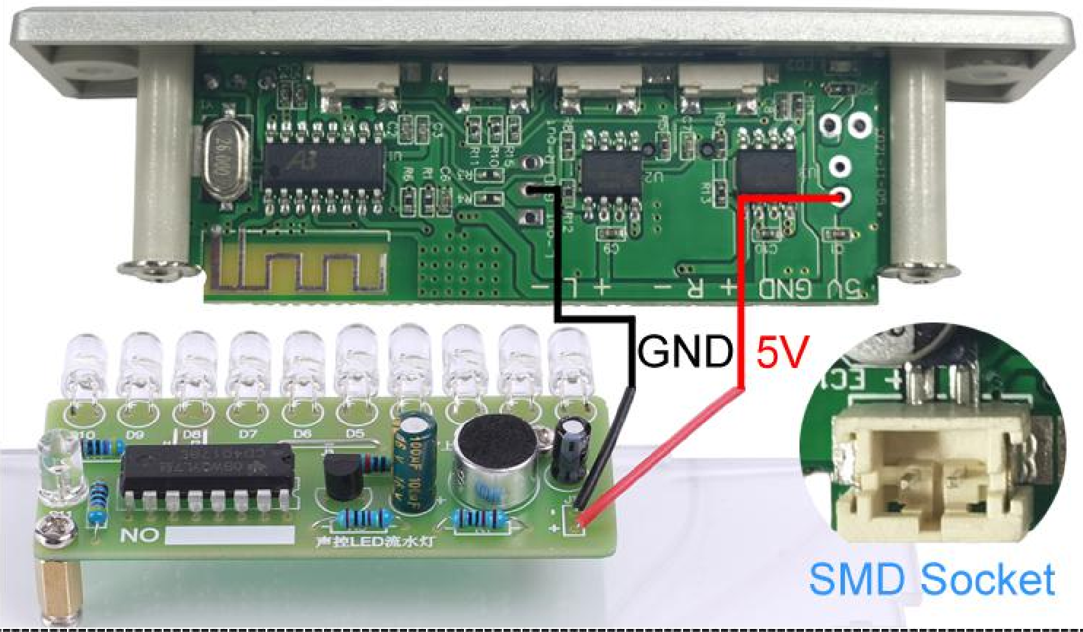


Step 20: Connect from LED board to Bluetooth audio controller by 3 methods.

Method-1 for DIP Socket Version Bluetooth Module:
' 5V ' form Bluetooth module connect to ' + ' on LED board;
' GND ' form Bluetooth module connect to ' - ' on LED board.



Method-2 for SMD Socket Version Bluetooth Module:
' GND ' form Bluetooth module connect to ' - ' on LED board.
There is a pad on right which has marked on picture is 5V and connect this pad to 5V on LED board.



Method-3 for DIP and SMD Socket Version Bluetooth Module.
This method changes power supply connection point of LED light board.
User can refer to Step-26A which shown how to connect LED board if no find 5V/GND

Step 21: Install 2pcs 15cm 2Pin PH2.0 Wire on 2pcs 4ohm 3W Speaker.
The speakers does not need to distinguish between positive and negative poles.



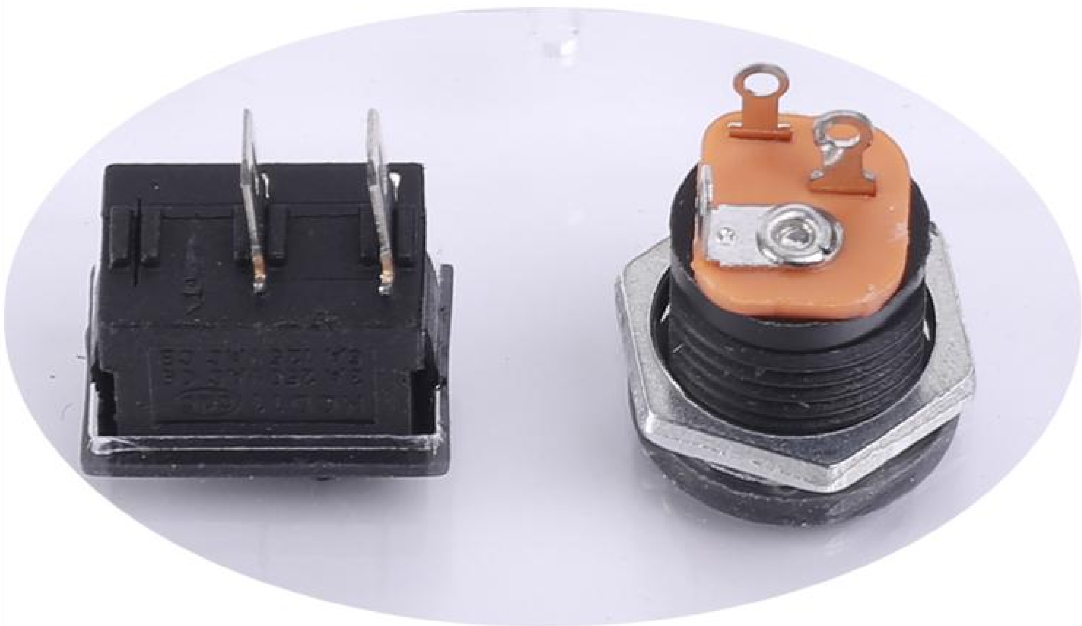
Step 22: Fix speaker on the other two are smaller acrylic panel by 8pcs M3*10mm Screw and 8pcs M3 Nut.



Step 23: Fix 1pcs DC-022 Power Socket by the biggest nut on acrylic panel.



Step 24: Fix 1pcs Black Switch on acrylic panel. Pay attention to the buckle on the switch, which can be fixed by itself.Pay attention to the installation direction.



Step 25: Cut about 3cm red wire to connect DC-022 Power Socket and Black Switch. Pay attention to their pin selection and can not choose to connect other pins.



Step 26: Connect 1pcs 15cm 2Pin PH2.0 Wire to DC-022 and Switch. The red wire connect to Black Switch and the black wire connect to DC-022 Power Socket. Refer to the wiring location shown if the wire is in another color.



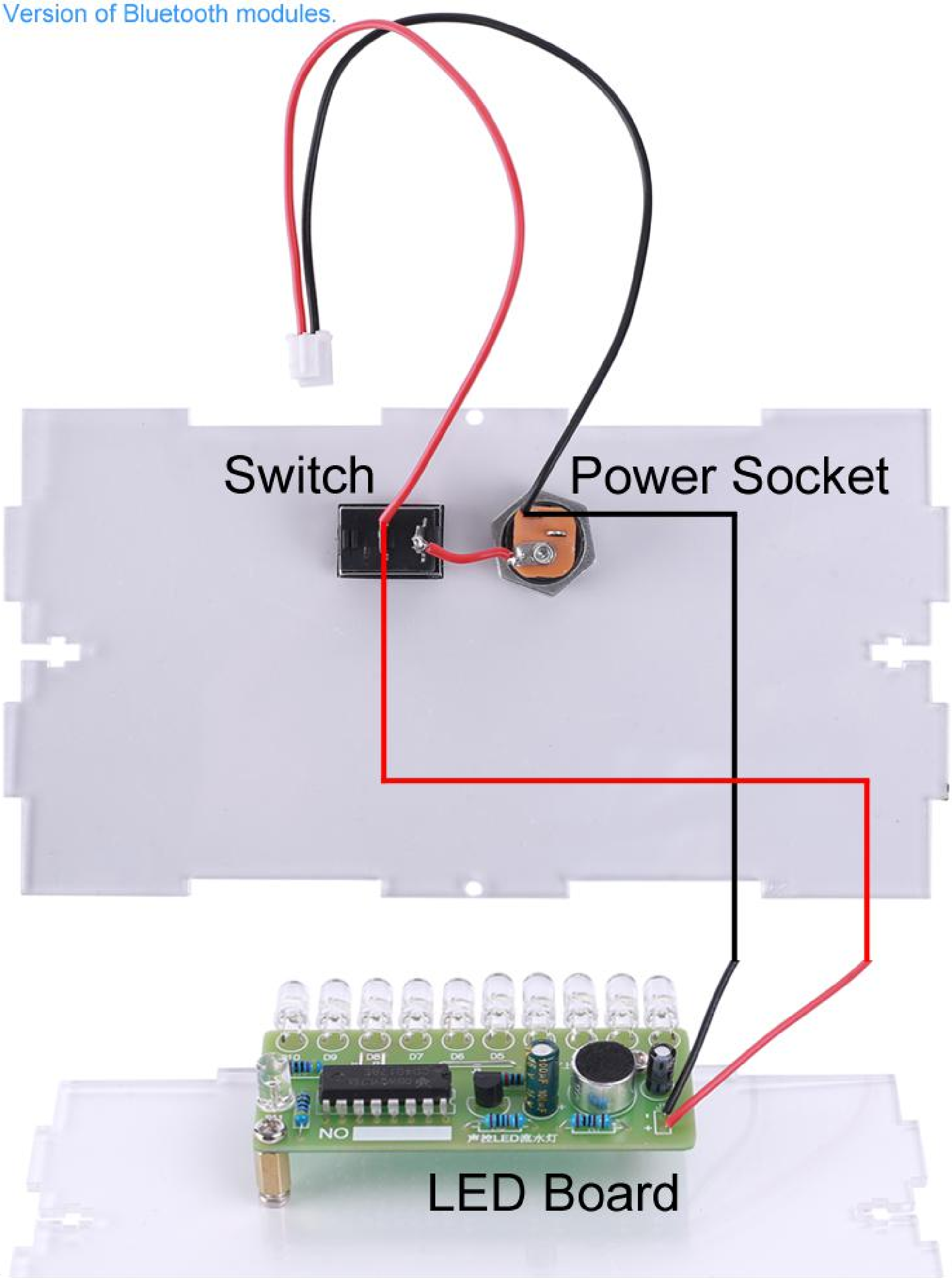
Step 26A: Connect LED spectrum board to Bluetooth audio controller if LED board get voltage form power socket and switch but not form Bluetooth module.

Otherwise user can ignore this step if use Method-1 or Method-2 at Step 20.

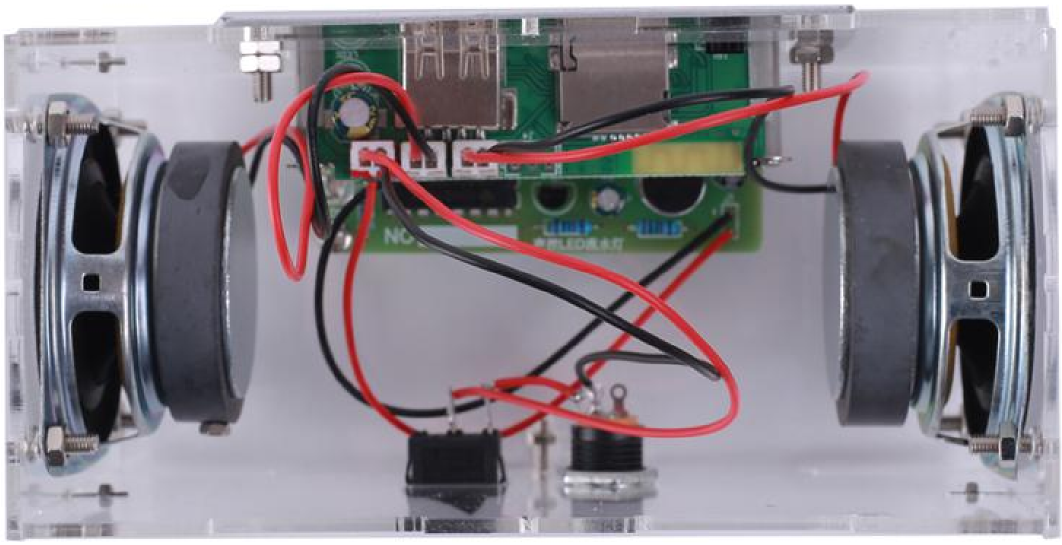
26A.1>. 5V on LED board connects to the middle pin on switch which has connected a red wire.

26A.2>. GND on LED board connects to the top pin on DC-022 Power Socket which has connected a black wire.

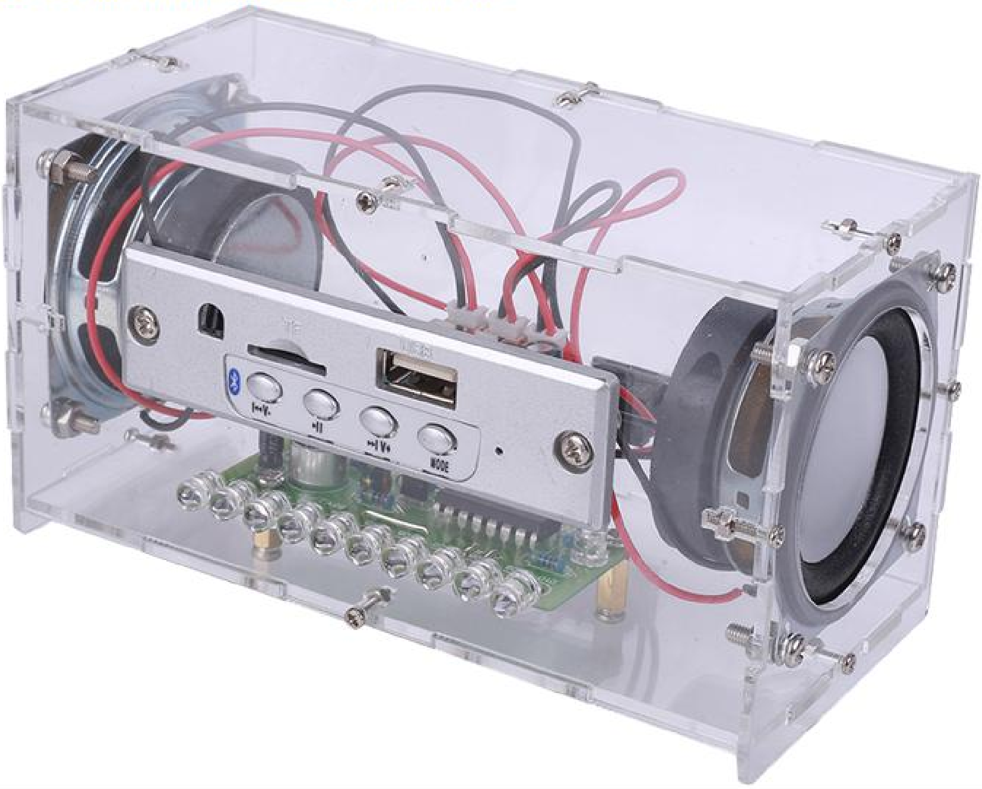
Note: User can refer to this connection method for both DIP and SMD Socket Version of Bluetooth modules.



Step 27: Connect 1pcs power wire to red socket and 2pcs speaker wires to white sockets.



Step 28: Assemble 6pcs acrylic panels by 12pcs M2*10mm Screw and 12pcs M2 Nut. Please be patient when installing the screws.



Step 29: Connect to power supply and enjoy the effect.Note Please provide sufficient working current.It is recommended to use a 5V 2A power supply.User should exercise care and provide additional support to the acrylic with one hand while pressing the switch into place with the other hand when the power is plugged in.

